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(54) **HYBRID SYSTEM OF FUEL CELL AND INTERNAL COMBUSTION ENGINE AND AUTOMOBILE PROVIDED WITH THE SAME**

(57) Abstract:

PROBLEM TO BE SOLVED: To improve efficiency of a system as a whole in the combination with a fuel cell and an internal combustion engine different from each other in temperature rise characteristic and load-efficiency characteristic.

SOLUTION: When starting a fuel cell 50, a reformer 40 and the fuel cell 50 are heated by heat generated by an engine 30 by flowing water within a circulating pipe line 81 of a temperature-adjusting device 80 in order of the engine 30, the reformer 40 and the fuel cell 50 and methanol aqueous solution supplied to the reformer 40 is heated by heat of exhaust gas of the engine 30. As a result, the reformer 40 and the fuel cell 50 can be made early into a normal operating state. When the fuel cell 50 is in the normal operating state, water within the circulating pipe line 81 is allowed to flow in order of the fuel cell 50, the reformer 40 and the engine

30 to cool them. Because a plurality of cooling systems are not required, this system can be made compact.

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